

Verifying reforecast-calibrated probabilities for 6-10 day and week +2 850 hPa temperatures

Tom Hamill

NOAA Earth System Research Lab

(303) 497-3060; tom.hamill@noaa.gov

Also: Gary Bates, Jeff Whitaker, Don Murray


Previously: web page for calibrated V1 reforecasts

Return to ESRL homepage. mental 6-10 and 8-14 x

www.esrl.noaa.gov/psd/forecasts/reforecast/maps.html

Calendar Bookmarks ESRL Library NOAA Directory NCARPeople HFIP Global Forecasts TinyURL ComcastMail Time & Attendance Reforecast2 Analog PSD helpdesk TC Tracker PSD Wiki

U.S. Department of Commerce | National Oceanic & Atmospheric Administration | NOAA Research

 **Earth System Research Laboratory**
Physical Sciences Division

Search PSD: Search
Calendar | People | Publications

Physical Sciences Division About Contact Research Data Products Outreach Intranet

Reforecast Project

- Home
- 6-10 & 8-14 Day Forecasts**
- Analog Precip Forecasts
- Download Data
- GFS Model Details
- Publications

PSD Branches

- Climate Analysis
- Water Cycle
- Weather & Climate Physics

ESRL Divisions

Program Links

6-10 and 8-14 Day Forecast Maps

[Verification Statistics](#) | [Description of Forecast Map Display](#)

Choose Forecast Map for Display

Geographic Region:

Initial Date (format: yyyyymmdd):
Please input a date within last 14 days: [show today](#)

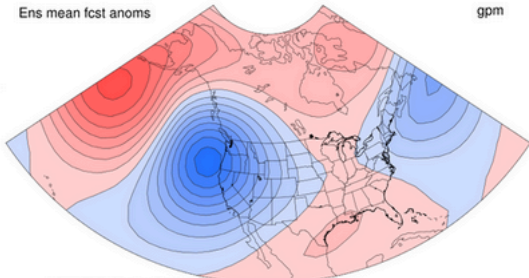
Forecast Day From Initial Date:

Variable:

[Get forecast plots](#)

hgt500 initialized 2012121400

Ens mean fcst anom



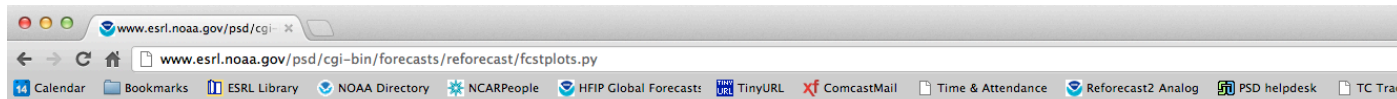
gpm

NOAA/ESRL Physical Science Division

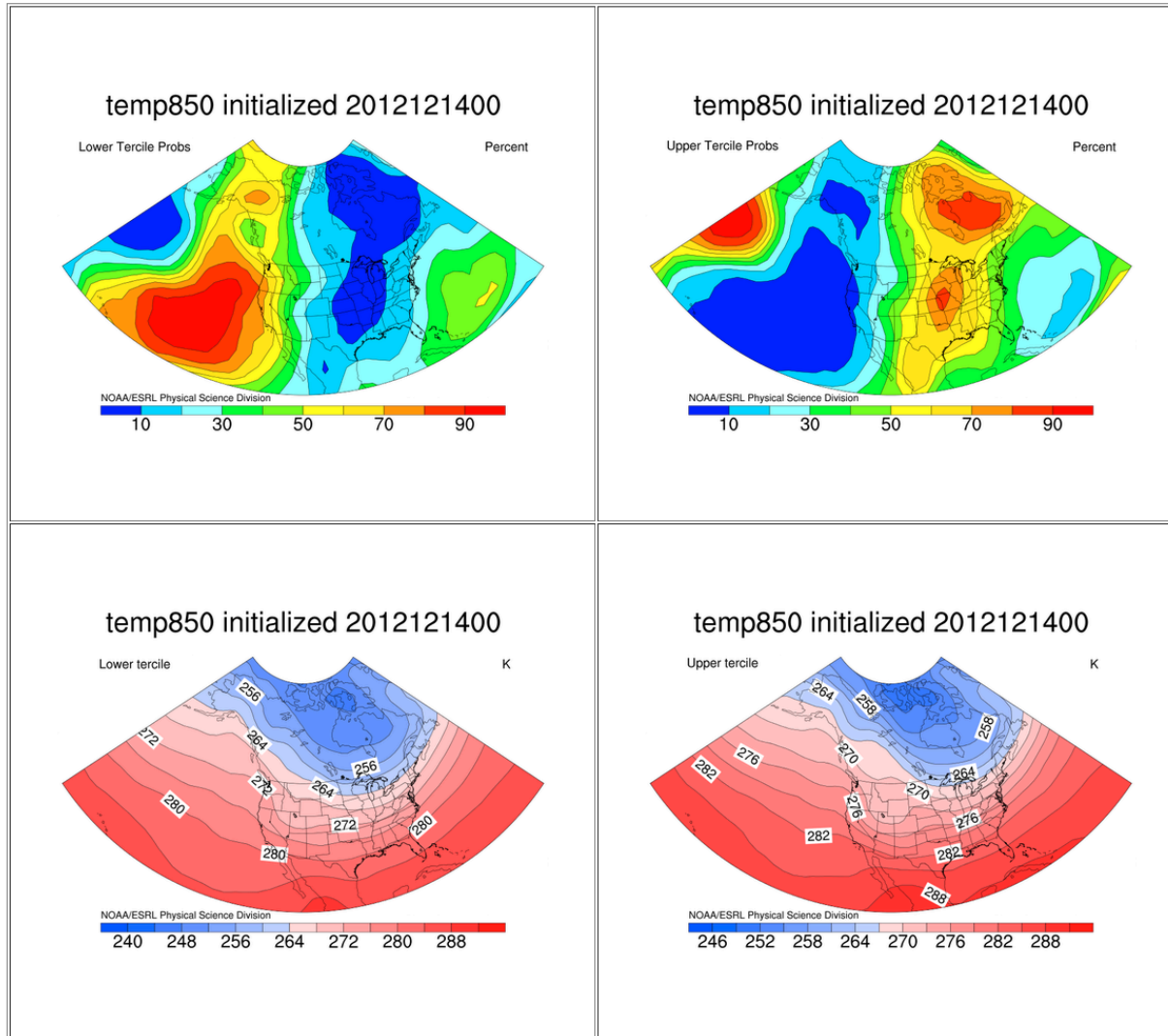
-200 -100 0 100 200

If you use these products and would like to seem them continue, please [let us know](#) how you use them.

Typical T850 experimental product from ESRL



[Go to previous page](#)



these sorts of products are presumably useful to CPC.

We'd like to replace this web page with one that serves up calibrated forecasts from reforecast v2.

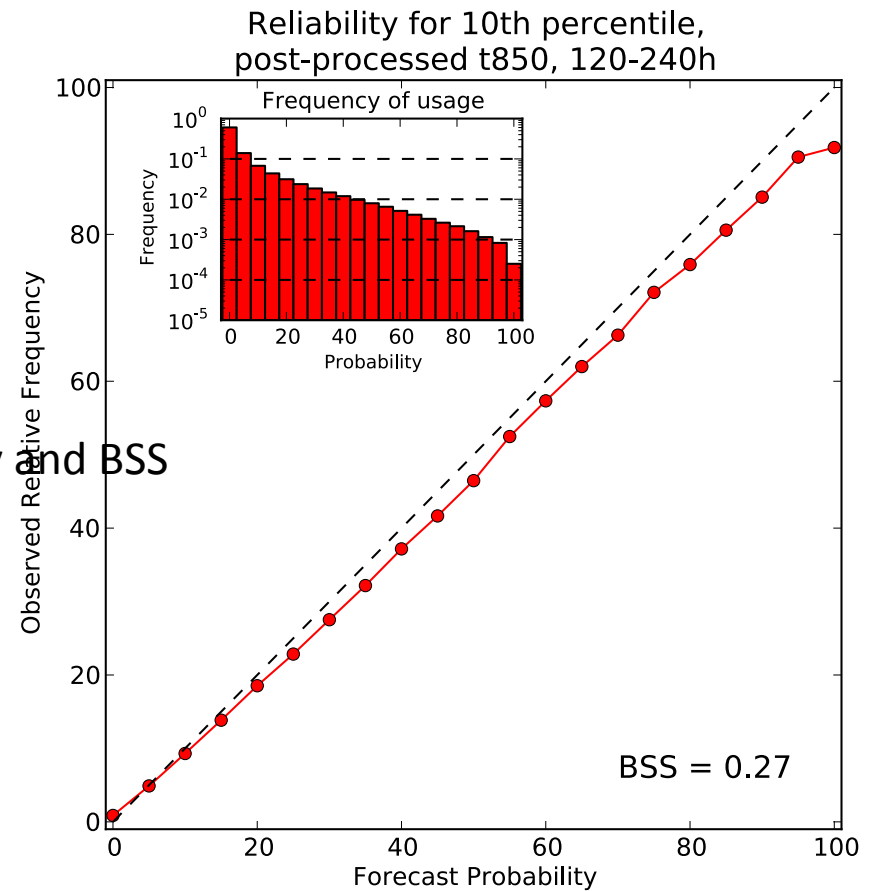
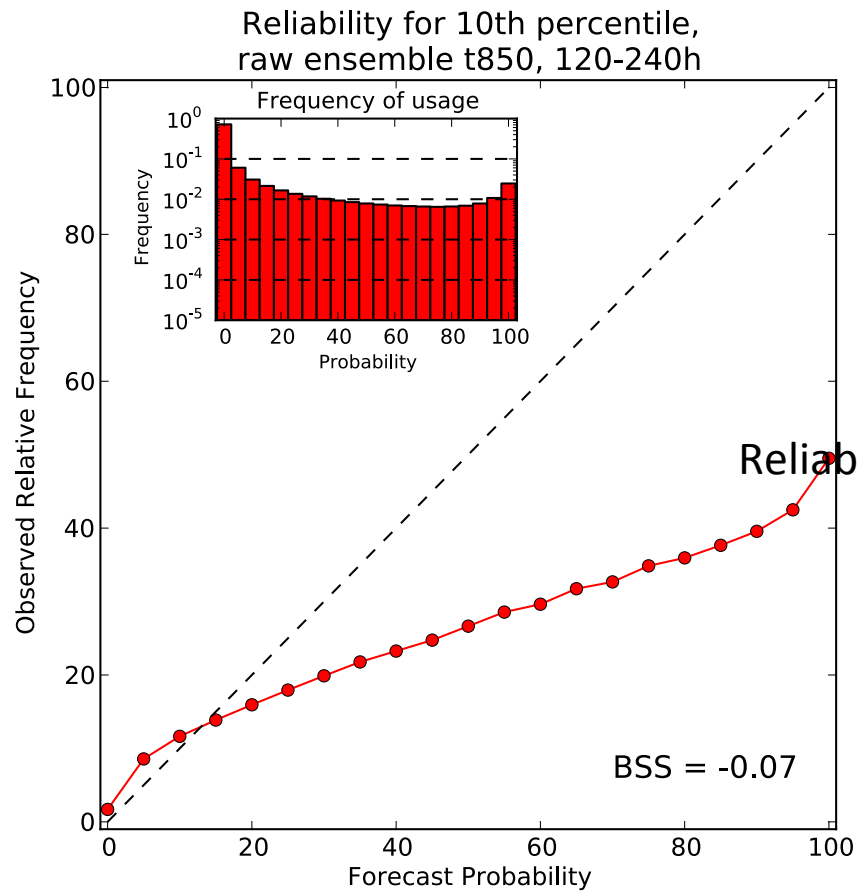
How much improvement will we see over the raw GEFS forecasts?

Method for testing calibration with version 2 reforecasts

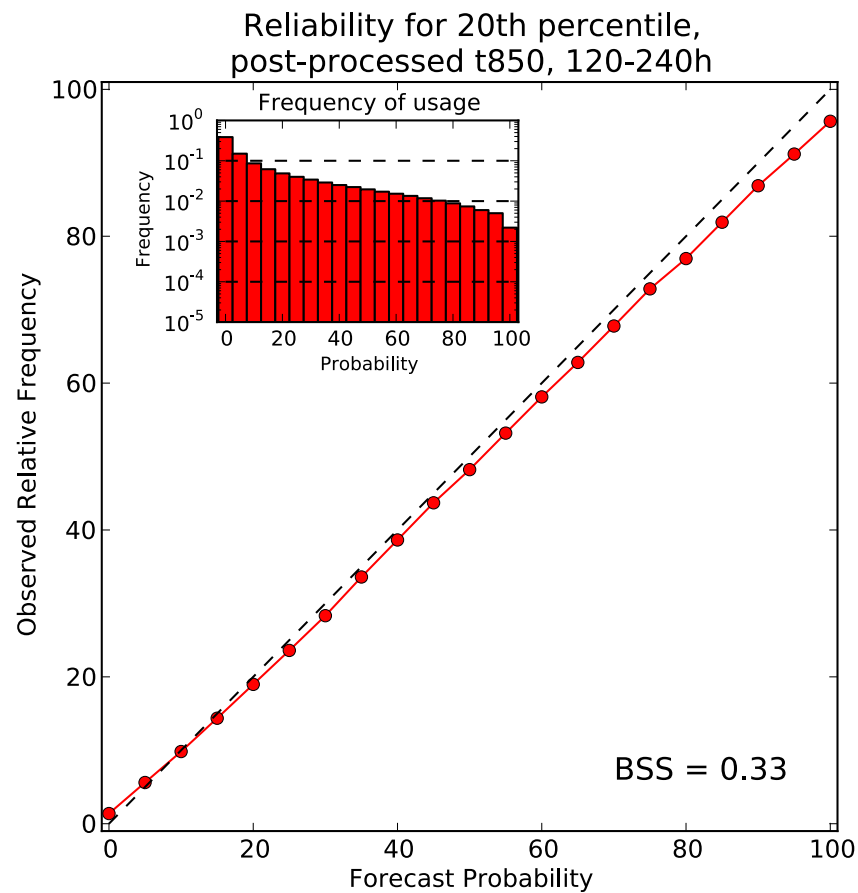
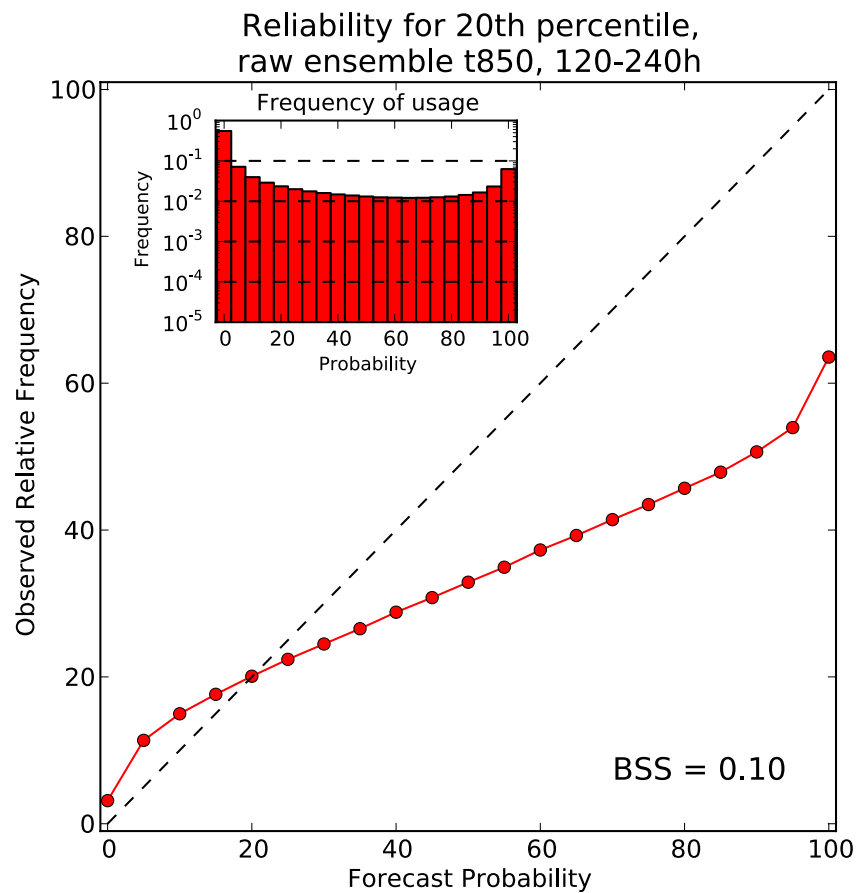
- Post-processed using the “nonhomogeneous Gaussian regression” of Gneiting et al. (MWR, May 2005). Linear regression approach, but allows the raw ensemble spread to define the amount of spread in the predicted Gaussian forecast distribution.
- Reliability diagrams composited over data from Dec 1984 – Dec 2011.
- Data is limited to the 1-degree, lat-lon grid that encompasses CONUS.
- Cross-validated, with regression model’s training data excluding a given year’s data, e.g., train 2011 based on 1984-2010 data.
- Forecast/analysis pairs every third day for the given month and the surrounding two months (x 26 years) used as training data. This means $3 \times 10 \times 26 = 780$ training samples typically used.
- When evaluating “raw” ensemble in following plots, actually evaluating a Gaussian pdf fit to the sample mean and spread.

+5 to +10 day forecasts (120 to 240 h)

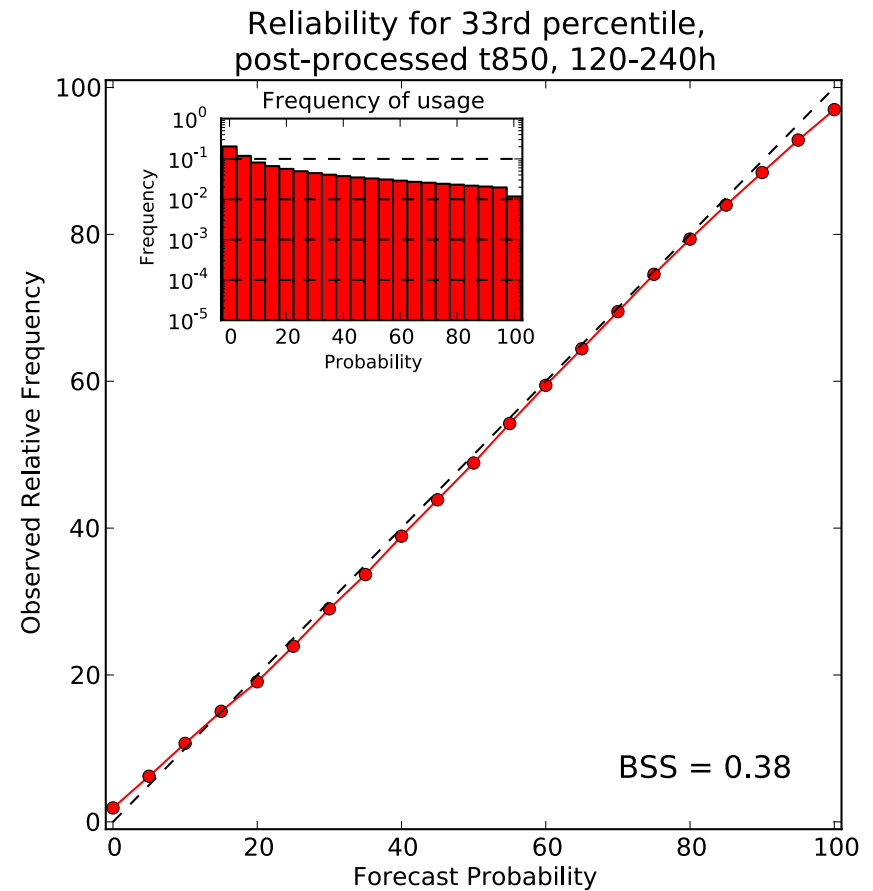
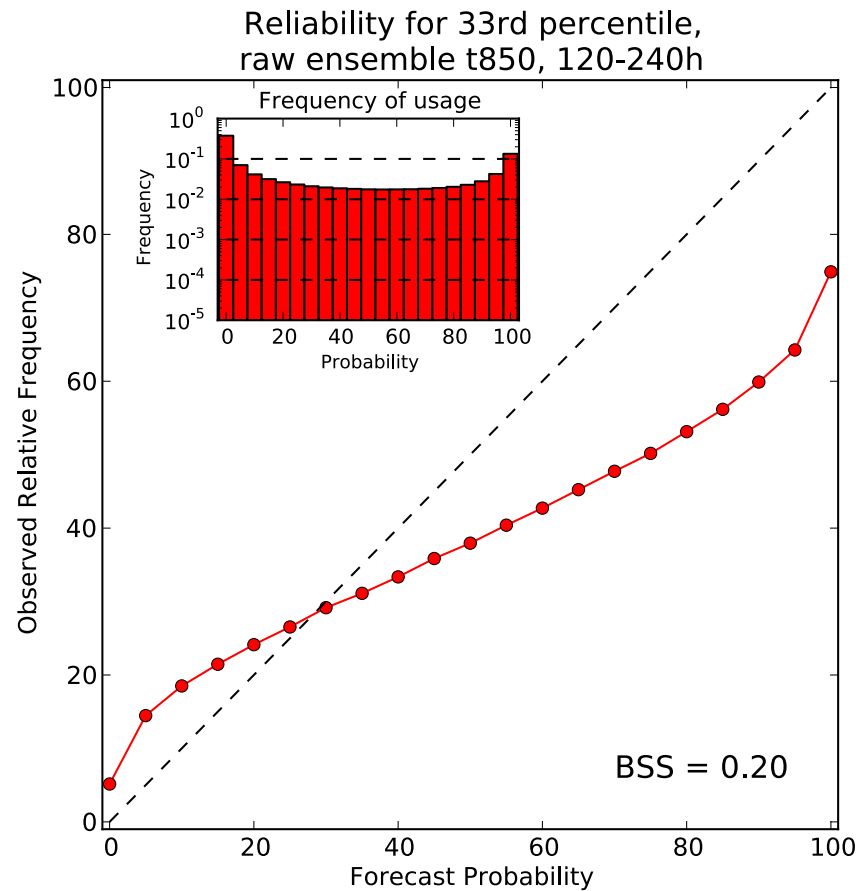
Reliability and BSS: lower decile



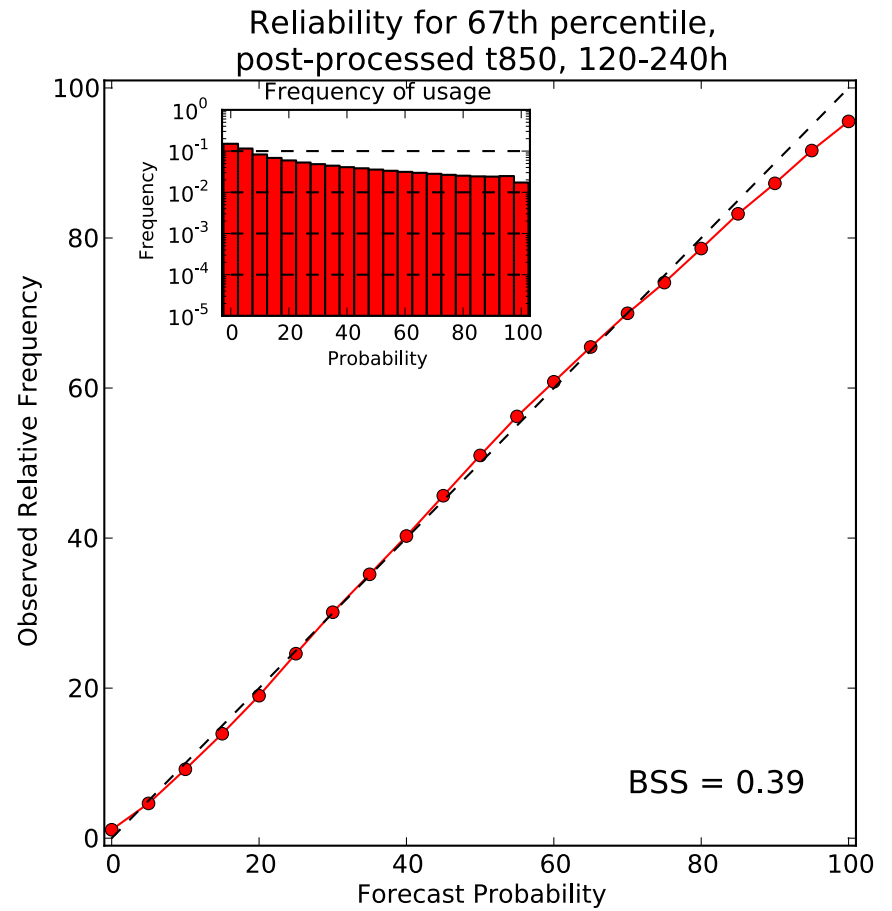
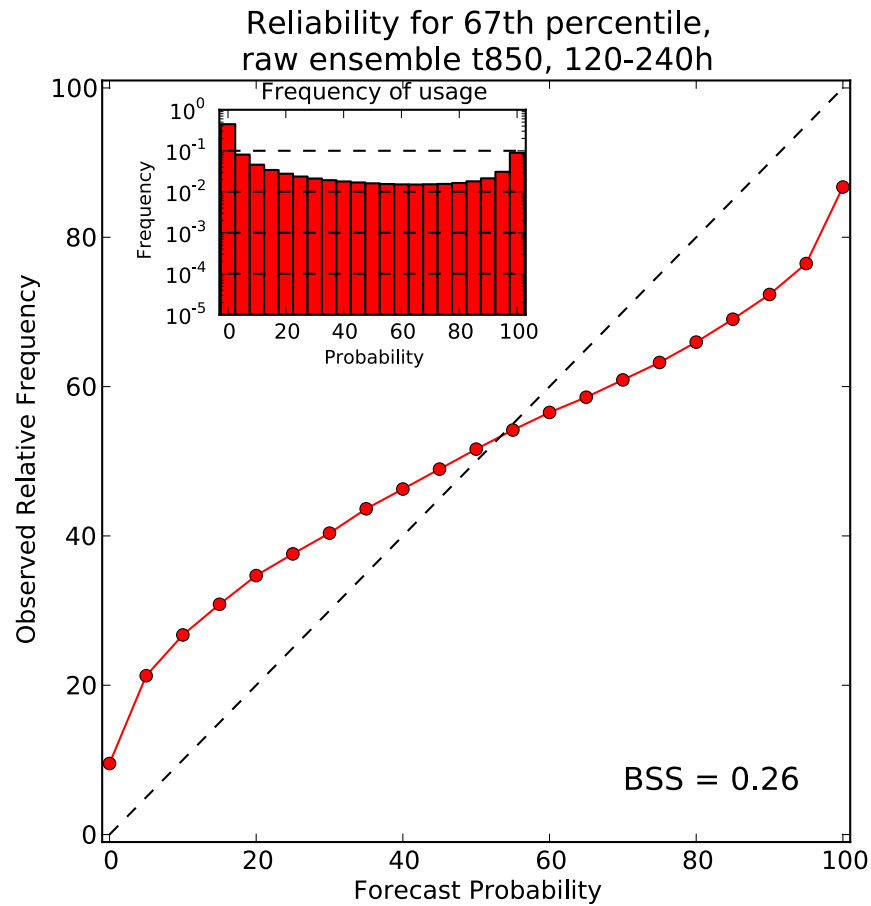
Lower quintile



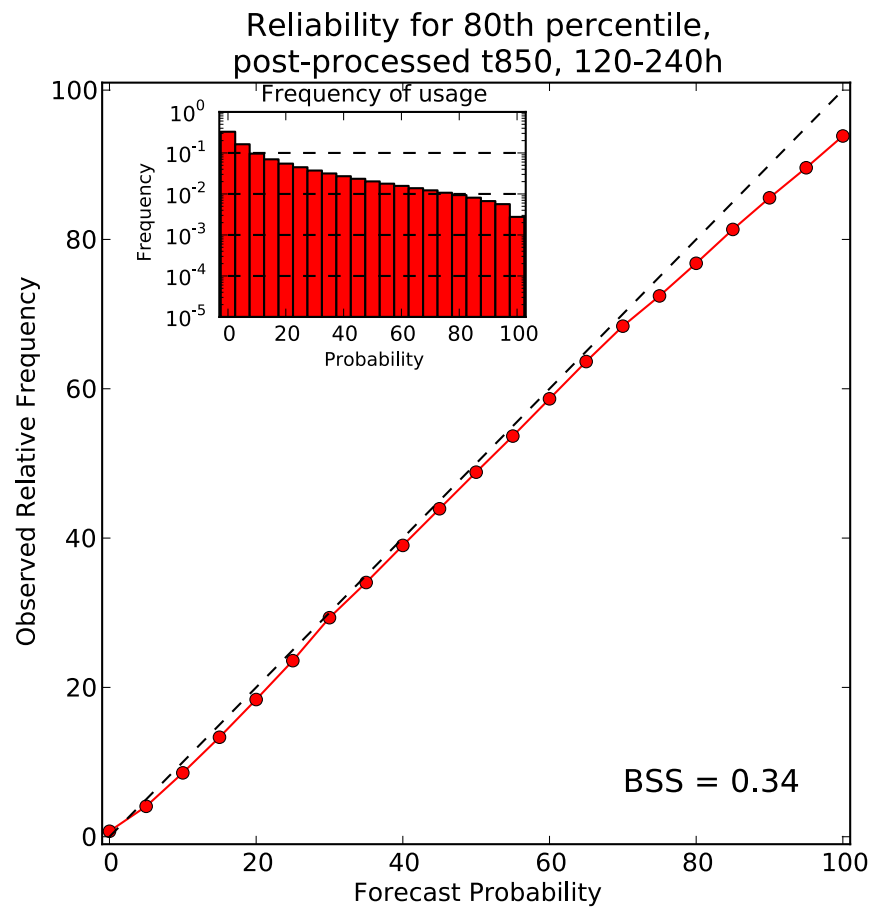
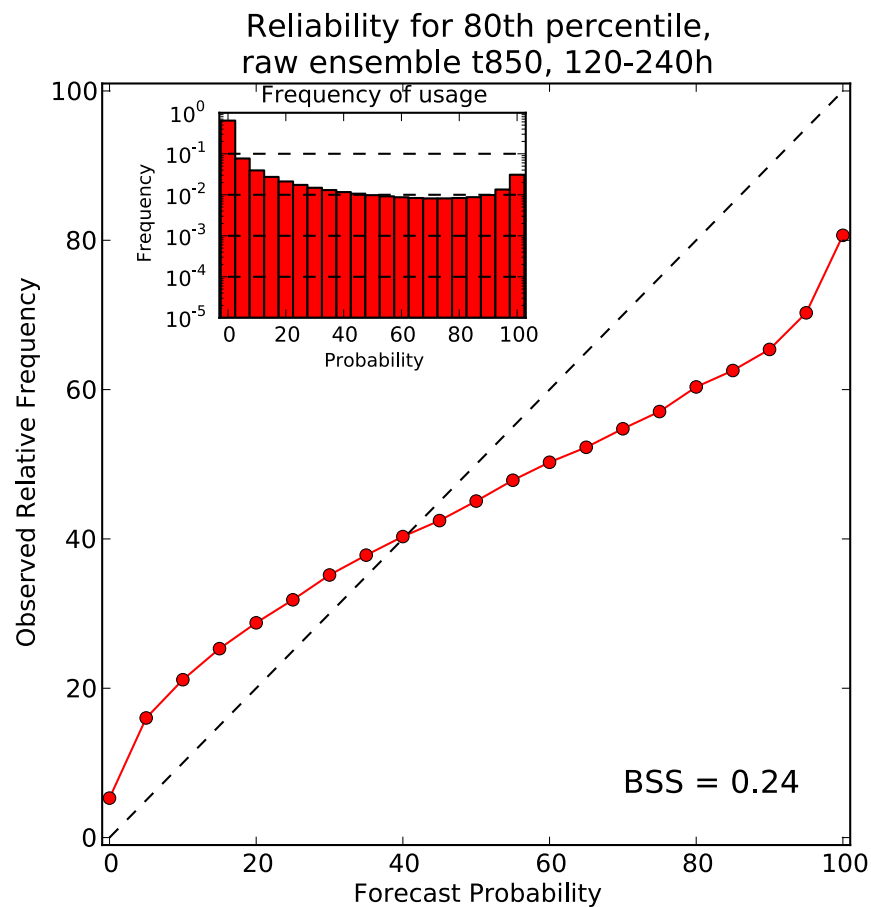
Lower tercile



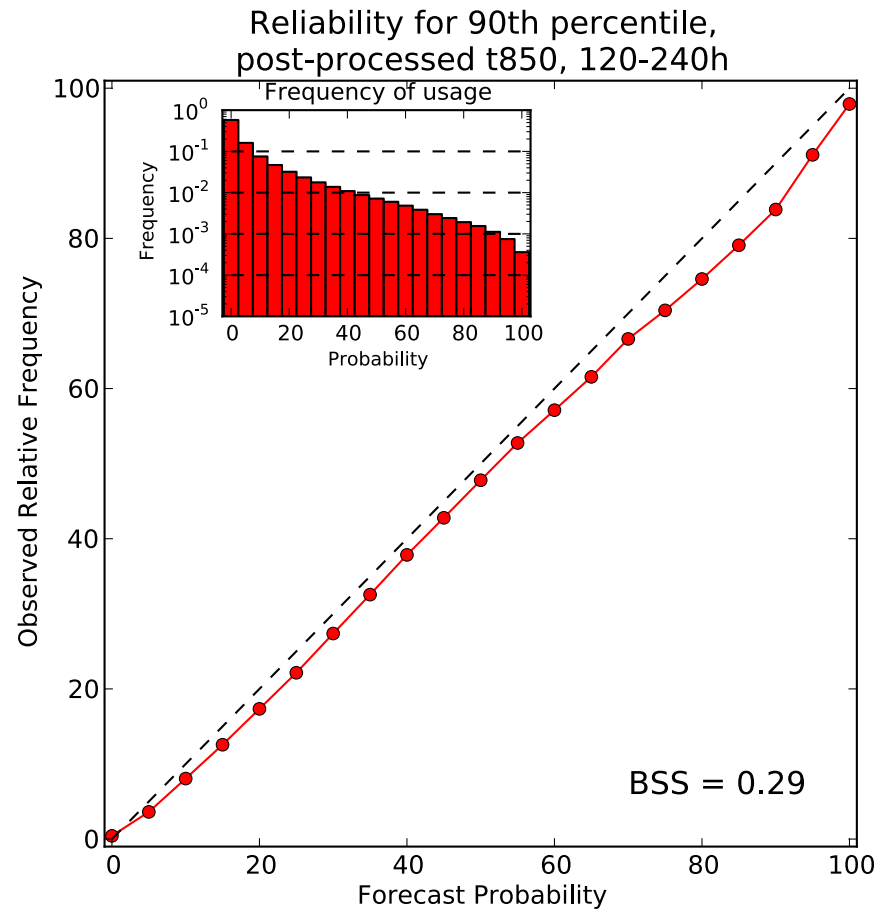
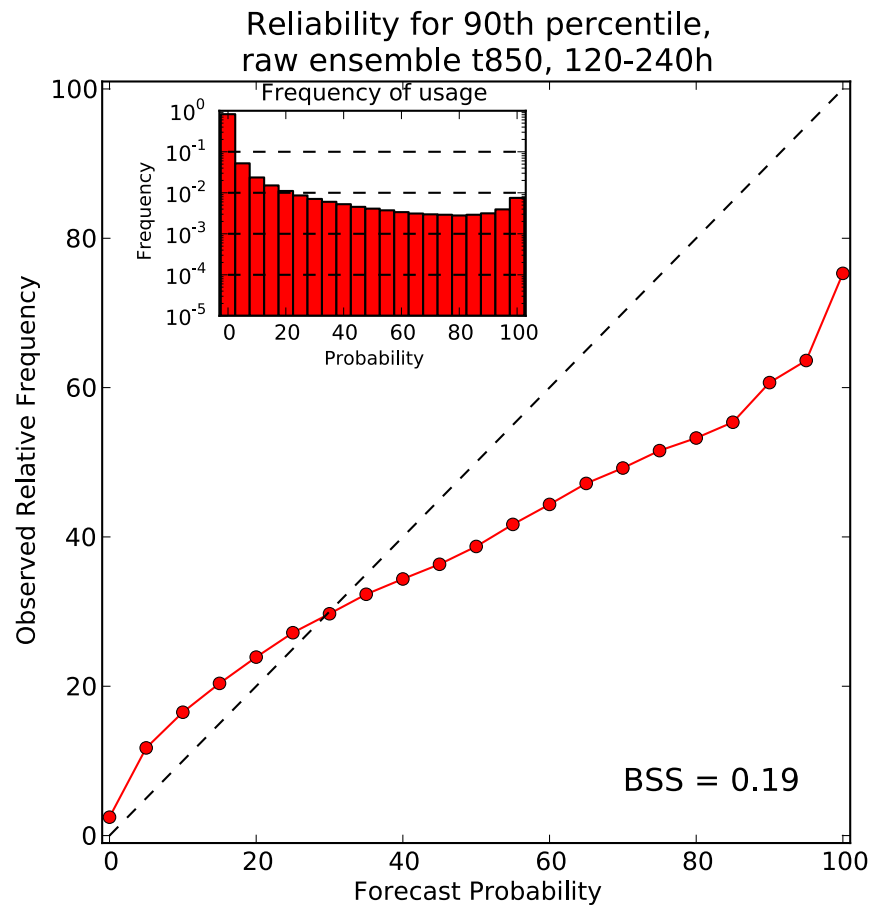
Upper tercile



Upper quintile

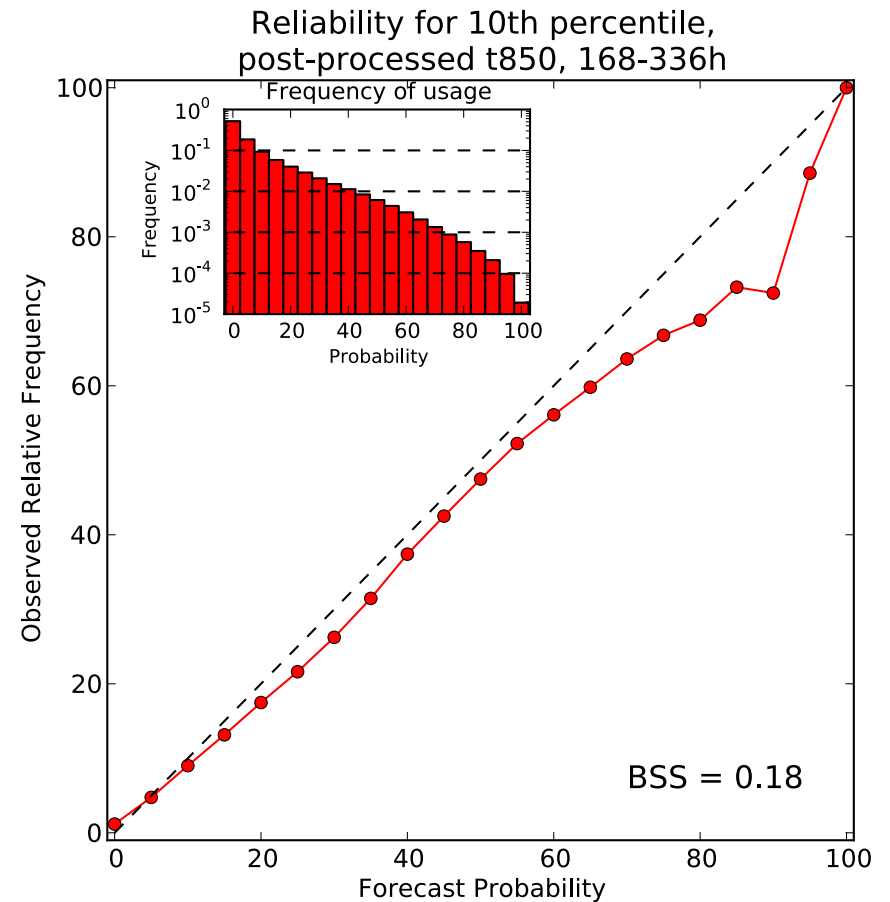
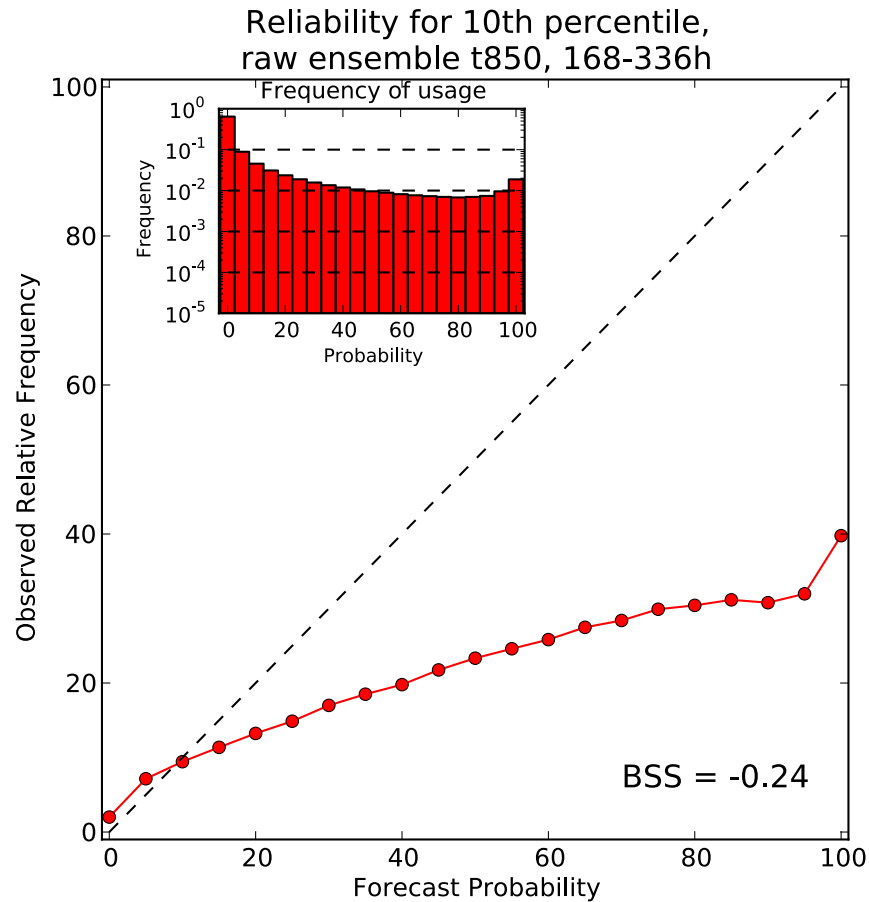


Upper decile

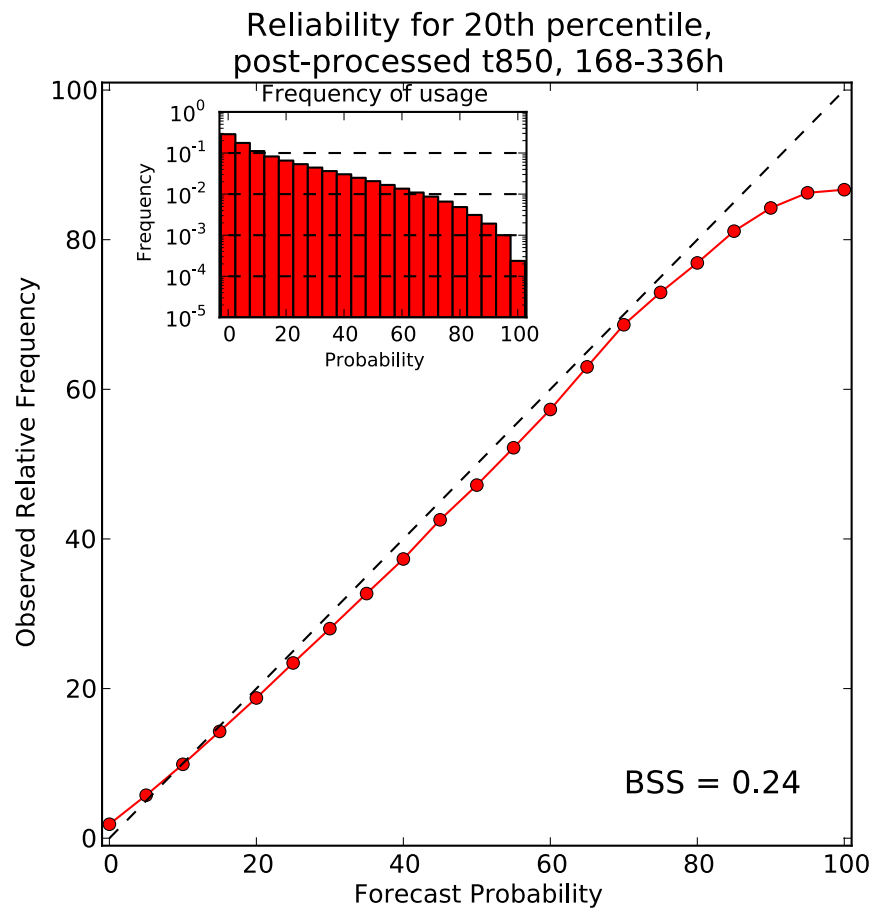
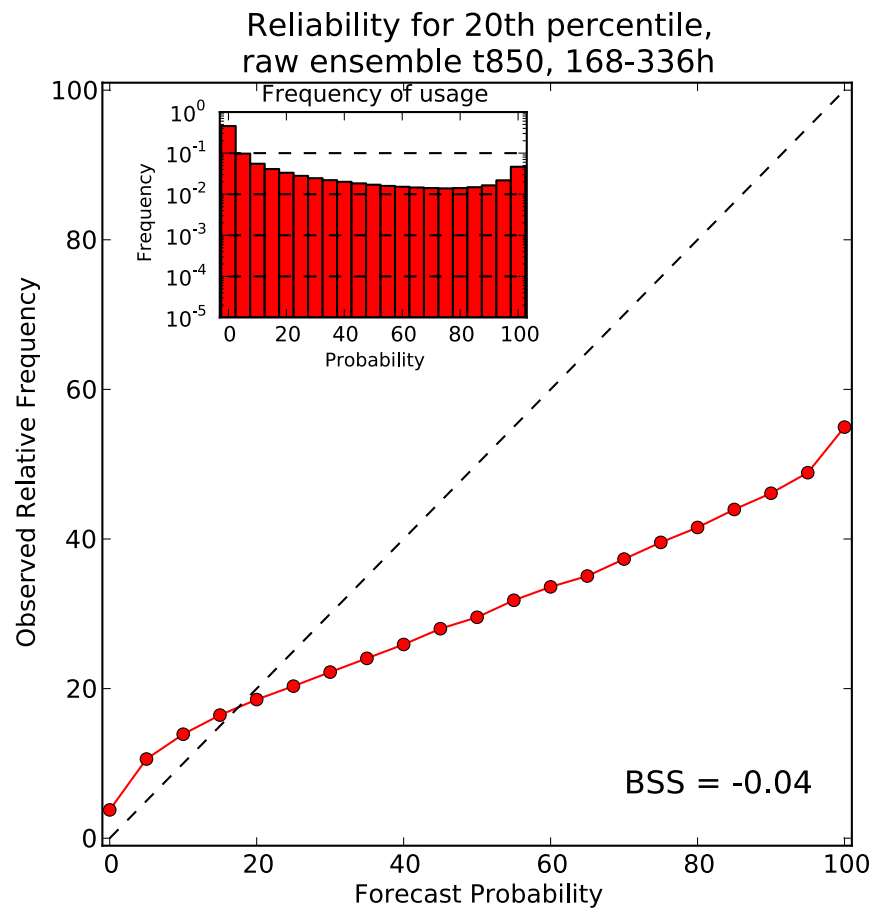


+7 to +14 day forecasts (168 to 336 h)

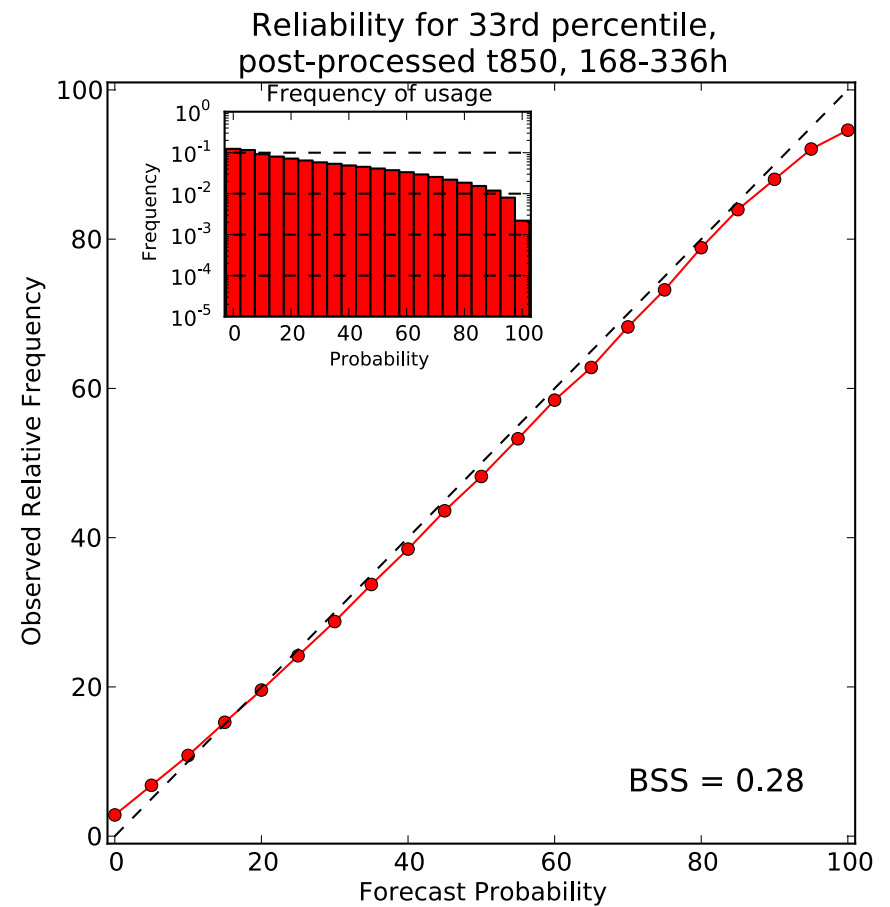
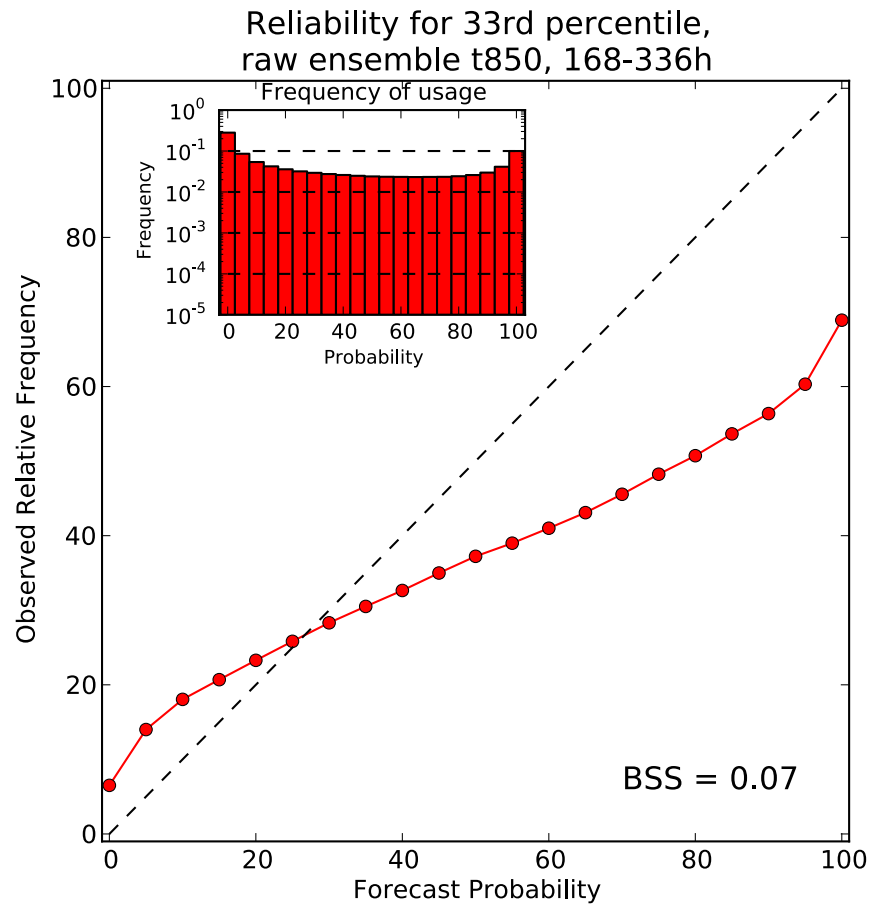
Reliability and BSS: lower decile



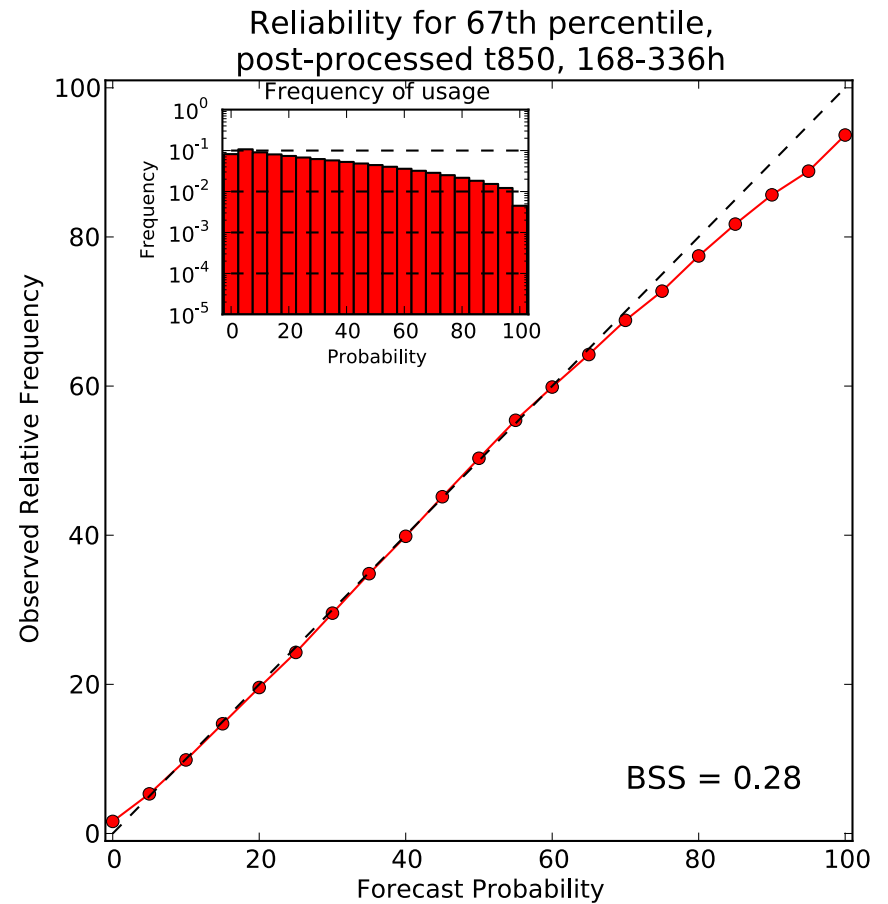
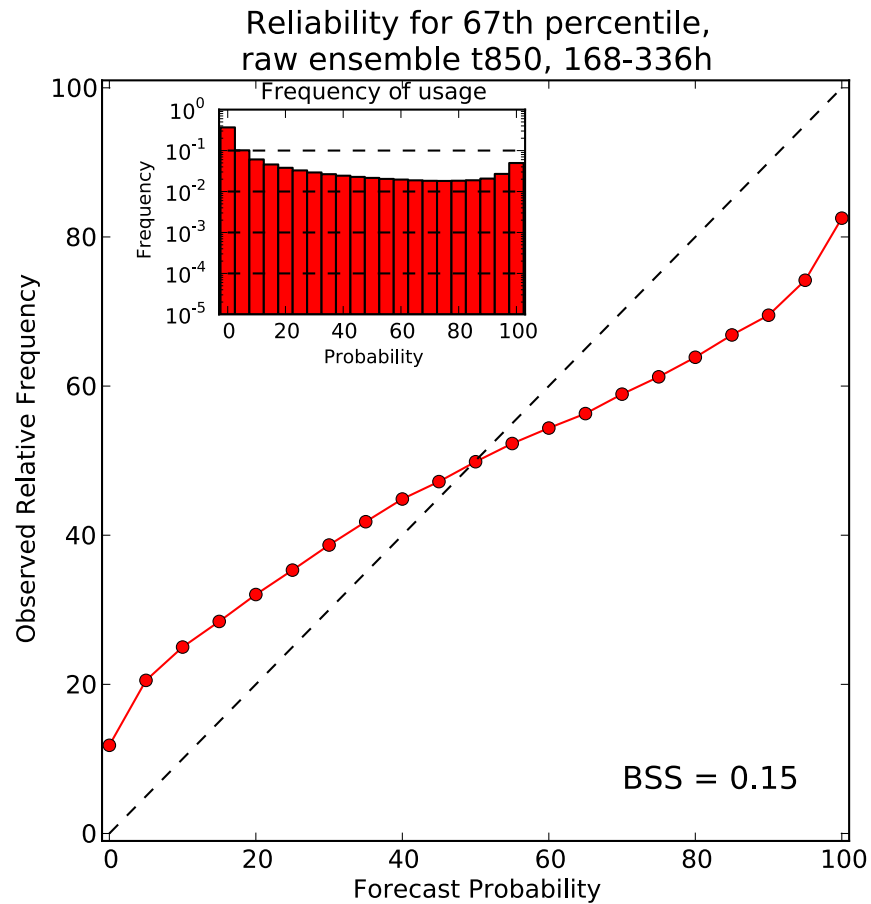
Lower quintile



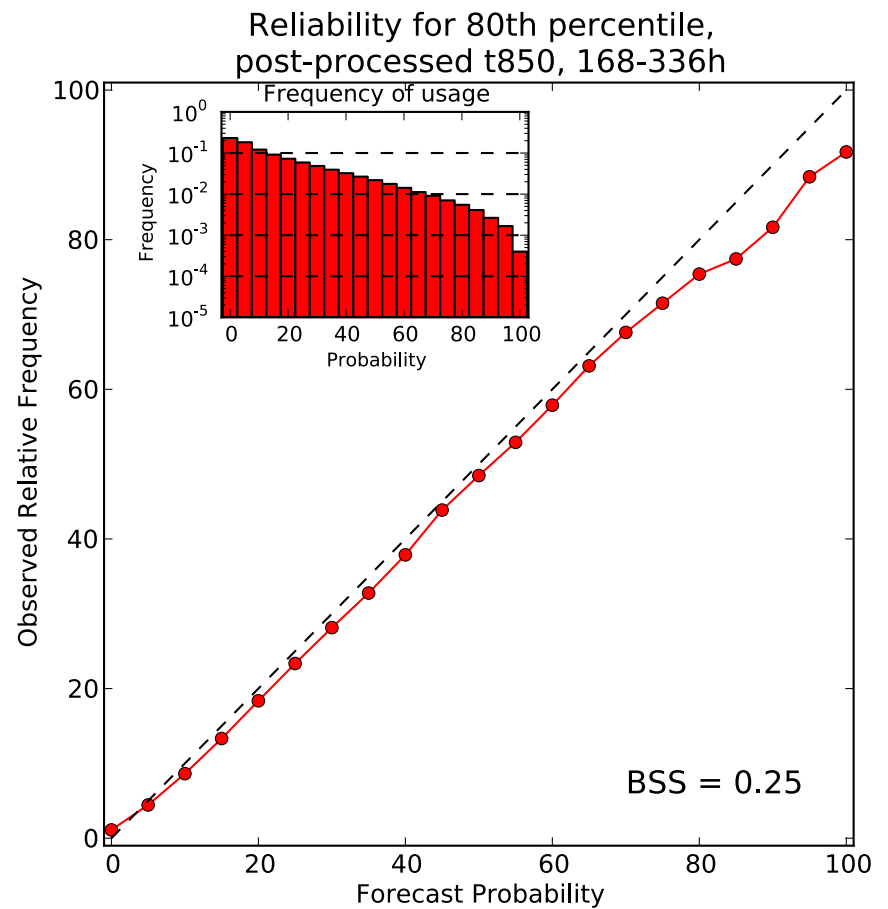
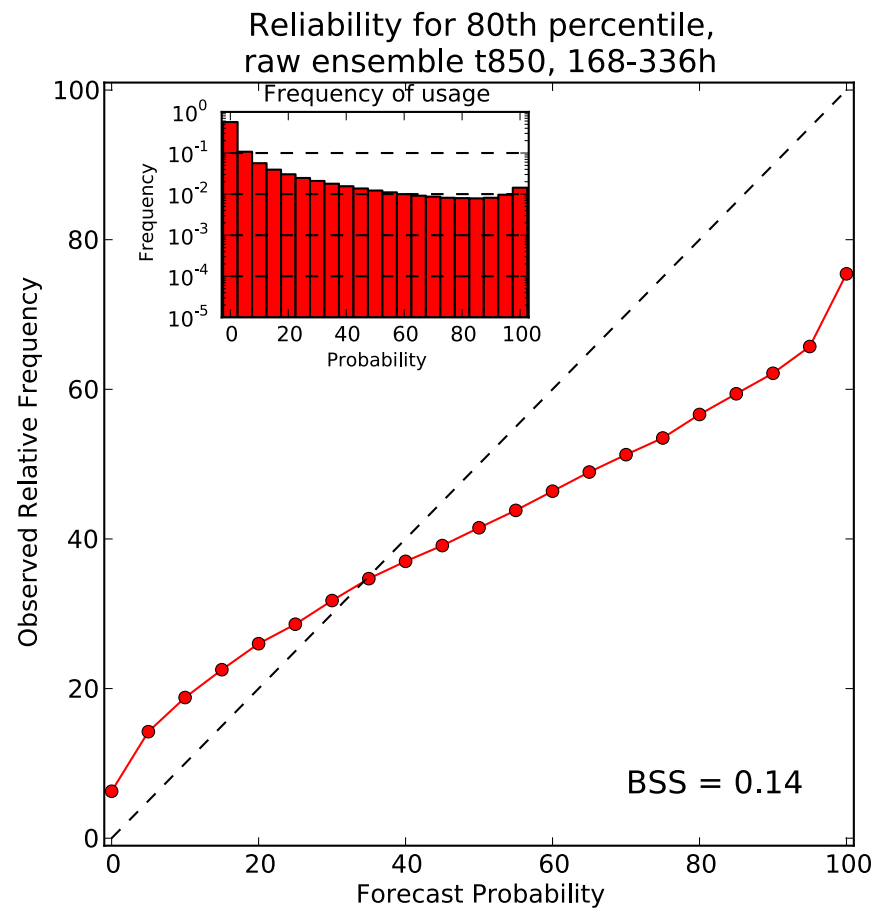
Lower tercile



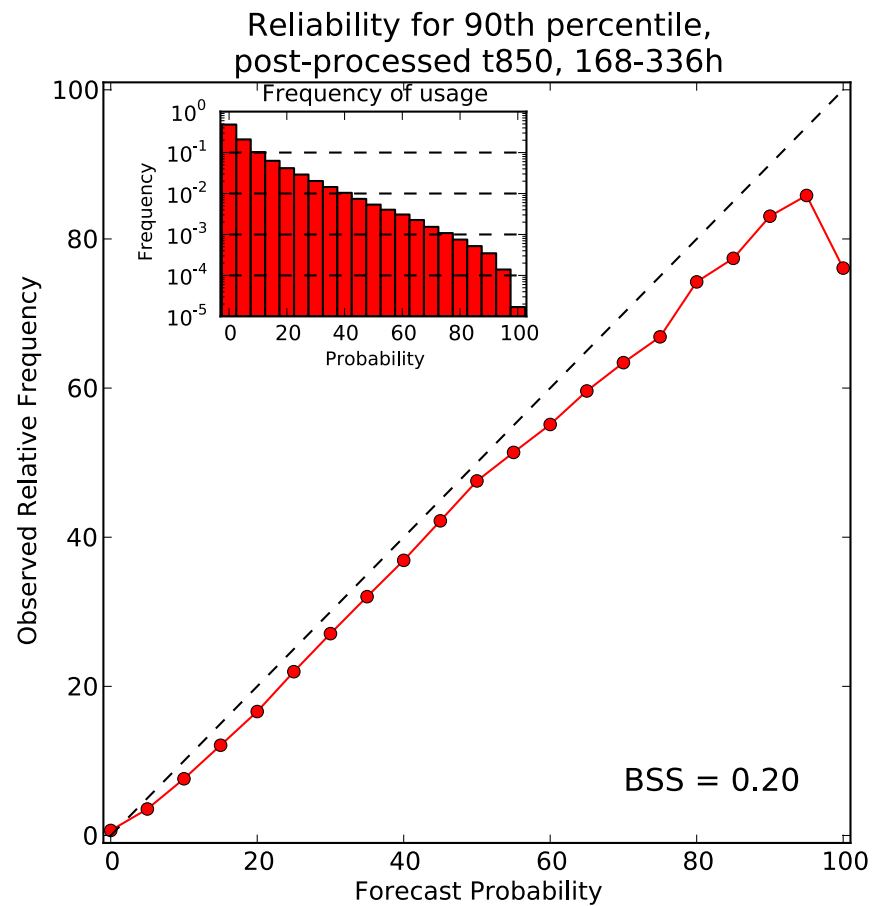
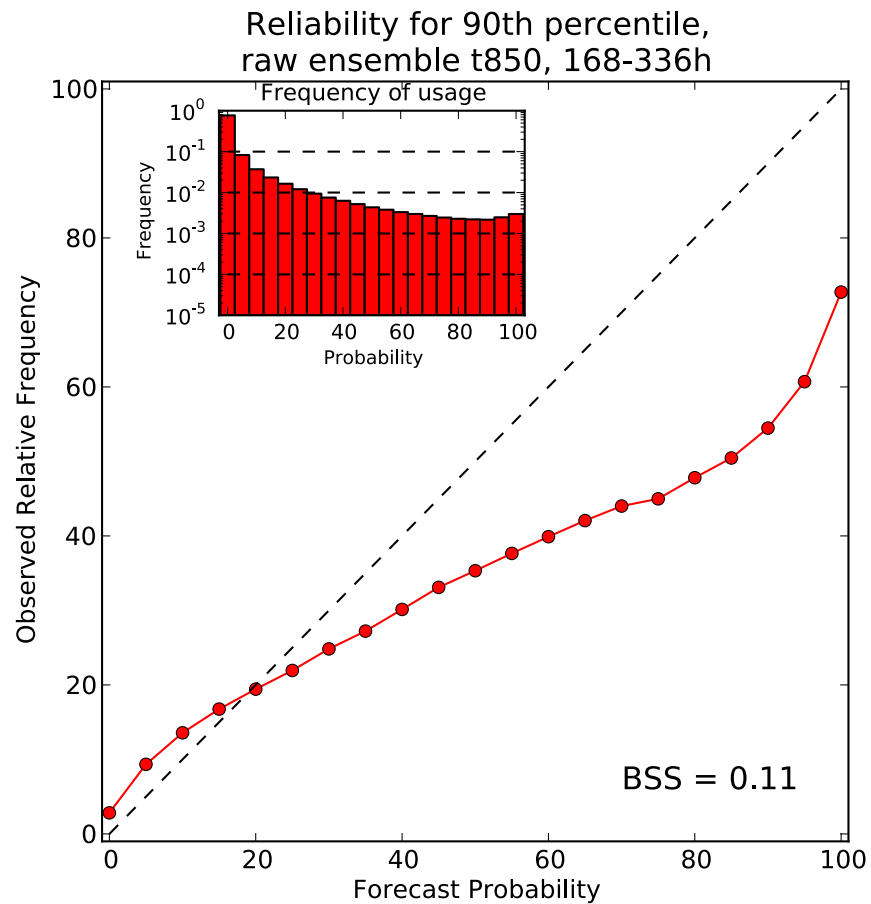
Upper tercile



Upper quintile



Upper decile



Conclusions

- Reforecast-based post-processing of T850 for 6-10 days and week +2 appears to be working satisfactorily.
- Once we have surface CFSR data here at ESRL, we'll repeat for 2-meter temperature.
- Intend to replace our reforecast V1 web page in the next month or so with this.